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November 1947

≡ SOIL CONSERVATION ≡

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CHIEF, SOIL CONSERVATION SERVICE

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WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

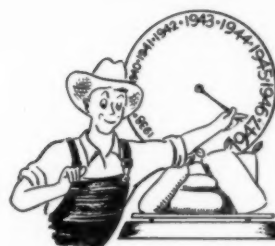
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COMEBACK OF FARM.—"Like other farms in our territory, ours was cleared from the forest by the first white farmers and immediately was subjected to all the bad farming practices that an unenlightened agriculture could devise," writes James Conner, Belle Center, Ohio, in relating his experience in rebuilding and reclaiming his farm.

"In less than one hundred years," he continued, "it was abandoned as an unproductive unit. I came into possession of the farm by purchase from the administrator of the estate in 1938. I remember yet the open naked gullies, the barren slopes where sheet erosion had taken away most of the topsoil, the rusty and broken fences and dilapidated buildings that an impoverished farmer had been unable to replace. Immediately I sought the assistance of the Soil Conservation Service. The entire order of bad agricultural practices was changed, we terraced where terraces were needed and strip cropped where strips were needed. We set 20,000 trees where the land was best suited to forestry and adopted the practices of pasture and crop

(Continued on page 80)

FRONT COVER.—Elvin Z. W. Compy, husky technician of the Soil Conservation Service, is seen examining the texture of a soil sample just taken with his auger on a farm in Prince Georges County, Md. His inventory, recorded on the aerial map, is basic to farm planning. All over the United States such samples are being taken every day, for soil conservation requires that land be used according to its best capabilities. All soil conservation practices are founded on a knowledge of physical factors such as soil types, slope, character and degree of erosion. Present land use, economic and social conditions, and farmer preferences also are taken into consideration. This fine photographic study,



made right in the field, is by Hermann Postlethwaite.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

NOTE.—
tion Serv



By J. A. Killough

20 Acres

Abernathy pays off, as each box is delivered; 5 cents cash per box picked.

HIS FARM boundaries have remained the same for 18 years, but you might say that Cicero Abernathy has doubled the size of his place during that period. That's because he's making 1 acre do now what it used to take 2 acres to do.

Abernathy is a Negro farmer who lives just outside the little town of Okay, Okla., in the northeast part of the State. His home farm is just 20 acres big. But he makes a living on that 20 acres. A good one. He raises truck and beef and pork and seeds, and this year his income is going to be right around \$3,000 on the place.

The little farm hasn't always been so productive as it is now. "It was in fair condition when I moved here 18 years ago," says Abernathy. "I averaged around one-half bale of cotton and 20 to 25 bushels of corn per acre. But I began to see that it was washing some in those crops, so I changed over in 1933 and went to truck farming to make a living."

"Strawberries, you might say, have always been my leader. I have an acre and a half of strawberries. Another half acre of the berries is coming into production next spring and still another half acre the spring of 1949. Watermelons are second leader. Then, I raise cantaloups, lima beans, tomatoes, blackeye and cream crowder peas, okra, corn, sweet peppers, and once in a while mustard and some spinach."

Abernathy began making a better living when he switched from cash crops to truck farming, but that soil washing he'd first noticed in 1933 kept up. By 1939, though, the erosion was beginning to take a real toll. Two or three fair-sized gullies were showing up. Abernathy decided to see the supervisors of the local soil conservation district. He went into Wagoner, headquarters for the Verdi-Grand Soil Conservation District, and applied for assistance in soil conservation work. A technician of the Soil Conservation Service working there went over the farm with the owner. Together, the technician and Abernathy worked out measures to control the erosion, build up the fertility and still fit right into the pattern of truck farming.

One of the first things done was to build a terrace outlet. When the sod on that spread enough to hold water without danger of washing, the terraces were rebuilt and enlarged. Later, weeping lovegrass was planted on each terrace. To restore fertility and productivity to the soil, Abernathy began to haul corn cobs, cotton burs,

NOTE.—The author is district conservationist, Soil Conservation Service, Claremore, Okla.

manure, straw and everything else he could find out to the fields. "Never take a load of truck to town I don't bring back something for the land," he puts it.

Now the farm has pretty well been covered with this treatment, which serves to build up the organic matter in the soil. "The soil is full of organic matter and it's fluffier than it was. It'll hold rain 10 to 15 days longer now than it used to. That helps when a drought starts in," says Abernathy.

For a winter cover crop to protect the soil against the beating, washing rains, Abernathy uses ryegrass on half of his 20 acres every year. The ryegrass gives him some grazing for his cattle, and like the cobs and burs and straw, adds organic matter to the soil when it is plowed under in the spring. The pea vines get plowed under, too. They put both organic matter and nitrogen in the soil.

Here is how the 20 acres stack up financially. The acre and a half of strawberries made \$830 this spring. The truck crops, sold by Abernathy from his pick-up truck on the streets of Wagoner and Muskogee, bring in \$1,050. The weeping lovegrass on the seven terraces on the place—about 2 acres altogether—brings around \$600 a year. That's sold as seed from \$3 to \$4 a pound. Weeping lovegrass is an excellent pasture grass which is in great



The tall grass waving off into the distance is one imported from Africa. Weeping lovegrass is used by Abernathy to keep his terraces from washing. He also cuts a valuable seed crop from the grass.

demand in the Western Gulf region. It's a fine erosion control crop. Two crops of hogs which feed off unsold truck, some pasture, and a great many odds and ends, bring \$500. And 200 quarts of fruits and vegetables canned every year for home use come in for consideration. Added up,



Both beans and cabbage need the weeds chopped out, so Cicero and his wife take hoes in hand and do the job.

that makes a total of better than \$3,000 income from the 20 acres.

Working that 20 acres might be enough for one man, but it isn't for Abernathy. He's practically through farming at home every year by fall. The rest of the year could be spent at leisure, but it isn't. Abernathy, being available in September, October, and November, gets steady employment hauling cotton and other crops for his neighbors. He spends time throughout the year on 20 acres which he has rented. Corn is raised there.

Three years ago Abernathy bought 60 more acres half a mile north of his home place. That's being developed as pasture. He has sown lovegrass on the terraces and ryegrass on the rest of it. Two tons of lime have been put out on each acre. There's already a good base of Bermuda grass on the land.

Abernathy's going to add yellow hop clover and lespedeza to that. Right now there are six brood cows running on the 60 acres. Abernathy sells baby beeves. Last year he sold five of the calves at \$65 each. The grasses and legumes in the pasture are just reaching full growth this year. It is planned that the 60 acres will support 12 cows most of the year when the improvement work is all installed.

"In the past 6 or 8 years we've at least doubled what we can make on our 20 acres," says Abernathy. "And we're building up the 60 acres. It's going to make us more and more as we improve it. We haven't reached the top on that pasture place, and we haven't on the home place either. The soil conservation things we do, keep building up benefits. All our yields can still be raised."

DEATH OF E. C. McARTHUR

NEWs of the tragic death of E. C. McArthur on September 8 came just as this issue of SOIL CONSERVATION Magazine was going to press. Mr. McArthur was president of the National Association of Soil Conservation Districts. (See the July 1945 issue, "South Carolina's McArthur.")

His was a loss that can never be made up. The whole program of the soil conservation movement in America was being tremendously aided by the efforts of this zealous and able leader. Being a farmer in that part of the country where erosion has wrought great havoc, the danger of the process to the very life of our Nation was thoroughly understood by him. He was a man of such thoroughgoing loyalty to his country that his whole being was consumed with a deep sense of the urgency of what needed to be done. Moreover, he had the energy, the imagination, the willpower, and the fortitude to speak out in the interest of farmer, community, and Nation. His efforts were ceaseless, invaluable.

He was held in high esteem and affection by all of us. Always we will be missing him.

—H. H. BENNETT



The late Mr. McArthur



A group of West Fork Soil Conservation District farmers discuss local program. Reading clockwise around table: Earl Furby (standing), T. L. Straley, president of Lewis County Farm Bureau; E. D. Bennett, Glendon P. Burton, Jr., R. M. Hartley, West Fork district supervisor; C. M. Francis, Forest Hitt, and John L. Burnside.



Left.—Seated in home of M. O. Miller, on Cedar Creek, is this first group of neighbors in Gilmer County organized to wage war on erosion. Seated: Howard Walters, Homer D. Furr, W. H. Bragg, M. R. McClung, county agent; M. O. Miller, Glendon P. Burton, Jr., soil conservationist; Fred Whiting, J. J. Massey, Fred Furr and Russell Reed. Standing: B. F. Frederick, Tommy Reed, and L. K. Grover.

By Glendon P. Burton

WITH THE NATIONAL budget whittled to the bone and with 15 to 20 new districts coming in each month, it takes no master mind to see that soil conservation district governing bodies and we technicians of the Soil Conservation Service will have to cover more territory at a faster pace. That raises a question: Can we get conservation practices on more and more acreage without sacrificing the quality of work?

That is a tough question, and I don't profess to have all of the answers. I would like to suggest, however, that we might give more attention to the group approach to form conservation planning.

Four years ago, group planning began in the West Fork Soil Conservation District of West Virginia. It was undertaken for three reasons: First, Ivan McKeever, who was then a zone conservationist, gave me the outline of a plan that he thought would work. Second, we were fairly sure that the average farmer didn't have sufficient knowledge of land-use capabilities to appreciate

fully the services of a farm planner. And, third, we believed that the district would have to reach a good many people in a fairly short time if conservation work were to get ahead of the soil losses taking place in the district.

We realized, of course, that the group approach to farm conservation planning was not a new idea. Other districts had tried it with success. My only reason for writing on this subject is that others might profit by a few of the West Fork District's experiences—and perhaps avoid some of its mistakes!

The group approach was started in a new area just after it had become part of the district. For that reason, the governing body thought that the farmers needed a good deal of basic information on conservation planning. So, after a group of 6 to 10 farmers got together, they usually held 6 meetings. Each one of them lasted about 90 minutes.

At the first meeting, farmers and farm planner gathered about the dining table in the home of the farmer who had shown the greatest interest. We discussed the economic need for conservation planning and farming. Then every farmer was

NOTE.—The author is work unit conservationist, West Fork Soil Conservation District, W. Va.

given a chance to sign a district agreement form.

At the following five meetings, we delved into proper land use, crop-land practices, pasture practices, woodland practices, and the duties of the conservation aid. I had a lesson plan to serve as a guide in each discussion, and also made sure that we had soil capability maps for each farm. In between the meetings, each farmer developed a conservation plan for his entire farm with the help of district technicians.

As the farmers of the district learned more about soil conservation and as technicians gradually developed more skill in working with groups, much of their discussion of basic information was eliminated and the number of the meetings was reduced. With each passing month, there was more demand for the services of a farm planner. The number of hours spent on discussion was decreased and the time spent in the field was increased.

After 4 years a system has evolved that seems to get results. It begins when a farmer comes to the district office to ask for help. Just what prompted him to come is sometimes difficult to know. It may have been a news article, a radio talk, or a few words spoken by another farmer. But, anyway, when he comes in, he is asked the names of four or five of his neighbors. The farms of these neighbors are then located and outlined on an aerial map.

When the farmer leaves, he has agreed to invite his neighbors to a group meeting. In the meantime, plain aerial maps and conservation survey prints are ordered.

When the aerial photographs arrive, the farmer is contacted and arrangements made for a meeting—usually at his home. Whereas at first six meetings were held, the practice now is to hold two 1½-hour meetings or one 3-hour afternoon meeting.

Let us suppose that two evening sessions are held. At the first, the leading farmer explains why we've come together and introduces the farm planner. This is the cue for discussion of land use problems in the neighborhood. Maybe these are listed on a blackboard: (1) Broom-sedge, (2) gullies, (3) low yields, (4) poor stands, (5) labor scarcity, (6) wet land, (7) crooked streams, (8) getting to land on top of hills, (9) steep land, (10) diseased trees.

The list need not be complete. Just put down what the farmers suggest. Try to get everyone

to think of the community and not of any particular farm.

Then we begin another list—the solution of these problems. This may take in such items as lime, fertilizer, mowing, reforestation, diversion ditches, strip cropping, contour cultivation, drainage, fencing cattle out of woods, and so on.

At this point, everyone's remarks are summarized and it is explained that there are six classes of land in the area. Each land class, it is noted, has certain capabilities, as do machinery, people, and livestock. It is announced that these land classes will be considered at the next meeting. Sometimes conservation survey prints are brought out, sometimes not.

At the beginning of the following meeting, the previous discussion is quickly reviewed. Then attention is drawn again to the blackboard, where four columns are listed: land classes, characteristics, most intensive use, and practices. The first two columns—land class and characteristics—have been filled in before the meeting began. The farmers are asked to help complete the last two columns dealing with land use and needed practices.

When we've finished, the outline may look something like this:

Class	Characteristics	Most intensive use	Practices
I. Green.....	Level, well drained, good soil type.	Row crop every year.	Lime, fertilizer, cover crop.
II. Yellow.....	Level, imperfectly drained, medium to good soil type.	do.....	Drainage, adapted seed mixture.
III. Red.....	Gentle sloping, medium to well drained, medium to good soil type.	3-year rotation	Contour cultivation. Strip cropping, diversion, sod waterway.
IV. Blue.....	Sloping, medium to well drained, medium to good soil type.	Long-term hay.	Long lived grasses, crop residue management.
VI. Orange....	Steep, good to poor soil type.	Pasture.....	Lime, phosphate, mowing, pasture management.
VII. Brown..	Very steep. Good to poor soil type.	Trees.....	Protect from fire and grazing, harvest mature trees, remove weed trees, borders.

By this time, most farmers are able to nail the practices to their own farms, acre by acre. They have the background of knowledge and the desire to go ahead with a complete soil and water conservation plan. Now it's only a matter of making a date with each farmer—and going to his place to plan the farm. At present, farmers do not sign agreement forms until their conservation plans are completed.

There are certain outstanding advantages to the group approach. First, it cuts down travel time for technicians. Second, most of the story can be told to several farms at the same time. Third, it enables the farm planner and the farmer to do a sounder job of planning. Fourth, it provides a systematic plan of procedure.

Group planning sells conservation to neighbors. This helps to prevent the possibility that an uninformed neighbor may unsell a prospect. In fact, it has the reverse effect: As farmers continue their discussions across the fence line, they become more convinced of the soundness of conservation farming.

Luckily, the help of a county agent who believed in conservation work was also available to the district. M. R. McClung, former county agent of Gilmer County who is now agricultural representative of the Monongahela Power Co. at Elkins, W. Va., helped spread the gospel of group planning.

From March 4, 1944, to March 4, 1947, 300 farms averaging approximately 150 acres each were planned. That's an average of 100 farms each year. I am told that this is a fairly good record. (Editor's note: This is an amazing record. The Northeastern States average for each farm planner last year was 28.8 farms, covering 4,271 acres; West Virginia average, 44.2 farms, covering 6,238 acres; and national average, 31.2 farms, covering 8,228 acres.)

The district can't rub an Alladin's lamp and get my every wish. Neither can some magic words be mumbled and be sure of success. I believe the district's experiences do, however, emphasize two principles:

(1) The district governing body and assisting technicians and county agent must first sell themselves on group action. They must believe in it, or no one else will.

(2) Develop a plan of approach applicable to the district and use it. Group approach to farm conservation planning varies with personalities, places and conditions.

As a final word, I might mention that we all felt mighty fine when the supervisors of the West Fork District thought through the group approach plan and adopted it. Once deciding upon it they simply passed a resolution adopting the group approach and since have participated in using it to help farmers get the maximum effective conservation on the land.

COMEBACK OF FARM

(Continued from page 74)

land improvement by liming, fertilizing and legume seeding. Immediately the land responded to care.

"Today in the short space of 9 years we have regained much that had been destroyed. Each year we have seen an improvement over the year before. Each year the bushels per acre in wheat and oats, the tons of hay per acre, the pasturage per animal unit have been higher. Each year we have seen the income in dollars and cents rise. In these years we have seen this farm pay back its original cost, the cost of the land improvement and the cost of building and fence improvements. Today we have a productive unit capable of supporting a 30-cow dairy with a production of 300,000 pounds of milk per year.

"From this beginning has sprung up the largest solid block of land in Logan County to be put under a soil conservation agreement. This block of land is 4 miles long with 1400 acres of land and 11 different owners. Of course this is only a fraction of the land in the area. Fifty or more land owners with probably 5,000 acres of land are still outside of a soil conservation agreement. This land is largely marginal land that responds readily with care and all could be made into a real producing unit."

WHOLE COMMUNITY BENEFITS.—"The production on my farm and neighbors' farms has more than doubled in the last 10 years," says Lon E. Reid, Ward, Ark.

"Since we have changed from the one-crop system, which was cotton, we have learned to rotate our crops, improve pastures, meadows and woodlots, grow soil-improvement crops, and as the result of this we have dairy cattle and today practically every farm in my community is on a cash and profitably-operating basis.

"We have been able to improve our homes, to have modern conveniences, to have better schools and churches. To just give you a better idea of how prosperous my community is, in 1946 we bought, hauled and spread gravel on approximately 25 miles of farm and market roads. . . . Instead of our soil getting poorer under the one-crop system, as it was doing, it is now improving and production is gradually being increased each year. We, as farmers, feel that this is in a large measure due to the assistance that is being afforded us through the Soil Conservation Service.

"I personally feel and am sure that my neighbors feel the same way I do, that the district program is the best method of carrying on soil conservation work."

BEST BLUEPRINT EVER SEEN.—"I had a plan written for my farm about two years ago, and I think that it is the best guide or blueprint by which to carry out farm operations that I have seen," says L. A. Long, St. Paris, Ohio.

"The whole system is a sound, grass-rooted principle, whereby you are attempting to show the farmer his problems and then assist him through your Service personnel, how he can improve or at least hold his own, in this critical situation of land waste. I think that it behooves us, one and all, farmers, business men, banker, or laborer, to get more soil conscious or soil minded! And wake up to the fact that only from the soil does he exist or prosper.

"This is my way of having you know that I think by having more of these plans written throughout our land, more and more people will look over the fence and see the benefits cooperators are receiving through the Soil Conservation Service."

Will SCS technicians who can speak fluently one or more foreign languages and who might be interested in foreign assignments please write, giving particulars, to William X. Hull, Foreign Liaison Representative, Soil Conservation Service, Washington 25, D. C.

YIELDS RESPOND TO GOOD CARE OF SOIL



Onions being harvested on Wunsch brothers' farm.

SIXTEEN YEARS of attentive care for the soil have brought fabulous crop increases to two farming brothers of Colorado—Christian and Fred Wunsch.

The brothers began farming for themselves in 1930, when they bought 100 acres of land near La Junta. They paid only a small down payment for their farm, and the land was not very productive. It was raising an average of 9 tons of sugar beets to the acre.

But the Wunsch brothers had learned a lot working for other people. They had had much time to think while they were down on their knees weeding beets. When they became landowners, it wasn't long before they began leveling their new land, changing field boundaries, realigning ditches, and improving irrigation methods. They spread barnyard manure and commercial fertilizers, and

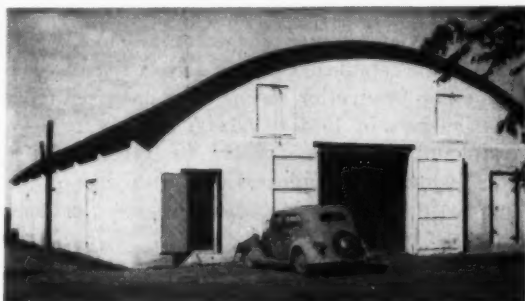


This modern duplex of the Wunsch brothers reflects the up-to-dateness of their farming methods.

grew green manure crops. They consulted the county extension agent, the Agricultural Experiment Station at Rocky Ford, the Bent Soil Conservation District, and the Soil Conservation Service technicians. They went in for study, experiments, and record-keeping.

After a few years of hard work, yields on the Wunsch farm began to increase. Crops were rotated, and more land was added to the original acreage. Today the brothers own 290 acres and lease 35 more, which they are improving year by year. The Wunsch brothers themselves did all the improving they could. They leveled the land where a fresno and float could do the work, and called on the district for technical assistance and heavy equipment when the problem became too big for light equipment. They studied the land capability and conservation needs on each acre.

Only two small sheds now remain of the jumble of shacks acquired with the farm. The place now



A new warehouse built recently by the Wunsch brothers.



Plastic siphons keep irrigation water under control. The irrigation head is just large enough to fill the head ditch and furrows without overflowing. Equalizing basins are used to help control the amount of water in the furrow and to prevent erosion.

has modern buildings, including a storage shed with a capacity of 130,000 bushels, which replaced two old boxcars. A second warehouse of even greater capacity has just been completed at the railroad yards in La Junta. Pump irrigation now supplements the ditch water, and when water is needed it is available.

The Wunsch brothers like to tell about one 45-acre field they bought which was cut up into 11 different fields, each surrounded by a dike which prevented the waste water from escaping when the fields were irrigated. This piece of ground has been turned into a single, level field, well-drained, and all irrigated in one direction.

But the farm records on yields tell the story that makes all this preparation significant. After being worked over, one 24-acre field produced enough potatoes in one year to pay for the land,

the leveling, fertilizing, and other operations. The cost was about \$5,000. Production of onions increased from 400 bushels per acre in 1934 to a peak of 1,450 bushels in 1942. Sugar beet production jumped from 9 tons per acre to a record high in 1941 of more than 29 tons. Last year the farm produced enough beets to make 60,000 pounds of sugar. Cantaloupes reached an all-time record of 1,450 marketable melons per acre last year. The total onion production on the farm has risen from 1,600 bushels in 1934 to 88,000 bushels in 1944. Grain and alfalfa are grown for green manure crops, which are incidental to the raising of the four main crops—cantaloupes, onions, potatoes, and sugar beets.

Dwight S. Waters, district conservationist for the Soil Conservation Service in the Lamar area, says that this remarkable record is the result of

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Good furrow irrigation like this has made the Wunsch brothers successful farmers. The furrows are of uniform gradient, spaced evenly so that the water will seep and meet under the beds. Careful furrow irrigation permits soaking the root zone without wetting the surface, thus avoiding puddling on the surface and germination of weed seeds. The water is skilfully applied and its movement into the furrows controlled so that it fills the furrows properly.

hard work, study, experimentation, and good farm management.

"The Wunsch brothers take care of the soil," he says, "and the soil responds. They add humus, drain fields, level land, add fertilizer and keep records. They are constantly improving their irrigating methods."

When congratulated on the fine record of the farm, Fred Wunsch commented, "Well, we may not get rich off this farm, but we will at least pass it on to someone else in better shape than we found it."

The brothers recently received the W. G. Skelly Agricultural Achievement Award.

SAVE THE SOIL AND SAVE ALL

By John A. Cleaton

IF YOU LOOK at my topic, "Save the Soil and Save All," from any angle, you must admit that civilization is based on just 6 to 8 inches of topsoil. If we should lose this topsoil, civilization on this earth would cease to exist.

The history of civilization is a history of the exploitation of the soil. When soil becomes depleted and infertile, it ceases to be soil and becomes "dirt" that washes and blows away. The great cities of Central Asia, from which our ancestors come, are now buried under wind-blown sand and soil.

NORM.—John Cleaton was graduated from the LaCrosse, Va., high school in June 1946, and is now farming. He made this talk in the annual public speaking contest for vocational agricultural students when he was in school, and later repeated it at a meeting of the Virginia Association of Soil Conservation District Supervisors, at Lynchburg, Va. His father is a cooperator of the Southside Soil Conservation District.

There is no virgin soil. Civilization has come to a standstill. It must perish where it is or learn to rebuild soil that has been depleted by wasteful farming methods. Methods that have been advocated by the Soil Conservation Service can be used to restore worn-out land and to produce much greater crops than we have ever heard of being produced by the old system.

Recently I was talking to a colored farmer about soil conservation. I told him that healthy people could only remain healthy on fertile soil and that worn-out land made unhealthy, no-account people. "That sure is a fact," he replied, "the good Lord cannot make fine people out of poor dirt. He has to use so much poor yellow clay subsoil now that He has to put lampblack in it to give it a healthy color."

On December 5, 1945, the members of the LaCrosse Future Farmers of America attended a

hearing in the South Hill school on the Roanoke River flood control and hydroelectric project. This project is to cost the Federal Government \$38,000,000. It will produce 442,000,000 kilowatts per year of electricity. I sat and listened to the army engineers explain that over a period of the last 50 years each succeeding flood became a little worse until 1940 when three lives were lost and a \$5,277,500 property damage caused. Also, after the flood water receded, the mud deposited on the river low grounds contained so much poor clay that the river bottoms were no longer productive as they once were.

As I heard this I began to think how different the Roanoke River was in 1728 when Col. William Byrd was surveying the line between Virginia and North Carolina. He said: "The Roanoke River is a beautiful crystal-clear stream full of trout and other fish." Yet, not one person within the sound of my voice has ever seen the Roanoke River when it was clear. Day after day it flows toward the sea carrying with it just a little more of that topsoil upon which civilization depends.

If I attempted to speak here today about the national soil conservation program, it would be a lot of high-sounding words signifying nothing. Rather, I must confine my speech to my efforts in conserving the soil on my home farm—that my small effort will aid in making up the national program.

The first effort to conserve the soil on this farm was to terrace the fields so the water would run off slowly. I have seeded lespedeza mixed with herdsgrass on by fields so nitrogen and other plant food elements will not be lost during the winter months when the lespedeza plants are dead. I try never to let a field go through the winter without some green cover crop on it. Many of these cover crops I use as green manure crops.

I am just beginning to take advantage of strip cropping and contour tillage. By this method I hope soon to be able to cut down on the number of terraces in my fields. It is my dream to be able some day to sit on my porch at home and look across the pasture at the big field. The big field contains 30 acres of land on a hillside. What a beautiful sight my contour strip cropping will be, but the best of all, I will be holding my topsoil on the hillside, and the little stream at the foot of the hill will always be clear—my contribution to saving the soil!

Last year our agriculture teacher handed me a

farm magazine and asked me to report on "kudzu" the next day. I didn't know much about kudzu as a soil-conserving and land-building crop, for this was my first acquaintance with it. Later, H. M. Collins, district conservationist of the Southside Soil Conservation District, visited our school and told us more about kudzu. He also told me where I could secure some crowns for my farm.

In trying to convince the members of my class of the many advantages of kudzu, I convinced myself. My section of Virginia is often hit by floods. The mud deposited by the flood water makes the grass on the low grounds unfit for pasture. It was then that I began to hear about people who had fields of kudzu on their farms. Although these fields had carried the cattle during the summer months, they were again called upon to feed them during the fall months. I find it was a crop which will grow on poor land, will check erosion, and build soil fertility.

The crowns that I secured were planted for pasture on a field which is too steep to grow row crops profitably and very little grass will grow there. I have cut off this field from the rest of the pasture until my kudzu can get a start—so if you want to see the benefits of kudzu, come to see me about two years from now.

For years I have noticed that fields which run to the edge of woods will not grow crops and every year we had to cut the bushes back from the field.

Also, this land would wash badly, thus adding more topsoil to the river. Now comes another soil-building crop that will solve this problem and also give other benefits. This crop is sericea lespedeza. Sometime ago Will Jeter, III, of the State Forestry Service, brought enough sericea lespedeza for each member of the F. F. A. to plant along the edges of the fields. I find this crop will grow under shade, will stand dry weather, and is a good hay crop if cut at the right time. It produces a cover for birds and also furnishes the birds with food.

Seeding pasture, and the use of lime and phosphate, are two of the practices from which I am receiving real benefits.

I have nice timber on my farm and it is my desire to care for this timber in such a way that it will be a forest crop. Last year I planted 1,200 loblolly pine seedlings given me by the Soil Conservation Service.

(Continued on page 95)

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SAVE SOIL ON RENTED FARMS

By I. W. Arthur

"How can soil loss and depreciation be controlled and reduced on rented farms?"

WITH SURVEYS showing greater soil losses on rented than on owner-operated Iowa farms, this posed a big question for the State soil district commissioners.

Their problem boiled down to this. For a tenant to become aggressive in soil-conserving and soil-building work, he must have assurance of one of two things: either that he could stay on the farm until he had realized complete returns and some profit from any investment which he had made in soil conservation practices, or that he would receive fair compensation for any unused values remaining in his soil-improvement program in case he left the farm before gaining full returns.

Several aspects which retard the rapid adoption of soil-building and soil-saving practices on rented farms, had to be considered.

For instance, many of the practices are relatively new to farmers in the State of Iowa. There is no established custom which the owner and tenant could follow in determining the contribution each should make when establishing a good soil management practice. The tenant must be sure that he will be paid for any practices that he can't cash in on. There is a lack of any simple method by which owners and tenants can easily reach and record their agreement with no danger of misunderstanding.

To meet these needs, the first essential is that the owner and tenant agree to a systematic plan for saving and building the soil. Once they agree to work together, they can use the lease "rider." This rider, evolved by farmers, conservation officials, and Iowa State College extension people, working together, was first suggested by farmers and their soil conservation leaders in Mills County, Iowa. The rider was designed to be hooked on the tenant's existing farm lease. It would encourage him to become conservation-aggressive by assuring him of fair compensation for any unused soil-saving and soil-building investment in case he had to leave the farm before realizing his full return.

The rider achieves its objective through the following simple steps: First, the soil-building and soil-saving practices which are to be started on the farm during the year are listed. Second, the contributions to each practice which will be made by the owner and by the tenant are agreed on. Third, estimates of the value or cost of the tenant's contribution to each practice are made. Fourth, the compensation due to the tenant for unused value if he leaves the farm before he has had full return on his investment is set and agreed upon.

Now for the pros and cons of the plan.

If an aggressive soil-conservation program is to be carried on, the tenant is the one likely to do most of the work. The main purpose of the rider is, therefore, to get the tenant to participate in soil-building and soil-saving practices. But, if the landlord is slow to come around, the tenant has an impersonal plan and form with which to approach the landlord and make him a proposition.

On the other hand, the tenant may be the backward party in conservation work. If so, an impartial lease rider gives the landlord a handy device with which to encourage the renter to start a conservation program. Where the landlord is an absentee owner or has a local attorney or banker handling his farm, the tenant can make good use of the rider in persuading a hesitant landholder to do his part.

Since the lack of assurance of payment of unused value is oftentimes the thing which holds a tenant back, the rider deals only with those practices in which the tenant takes an aggressive part. It does not take care of soil-building practices which the landlord alone completes or pays for. It is generally understood that if the landlord completes a conservation practice such as liming or terracing, the tenant has no unused value coming.

It is well to recognize that these practices do not stand out alone by themselves. They must be considered with due regard to the whole set of relationships which exist between the owner and the tenant on a rented farm. Soil-building and soil-saving often come as a deal or trade between the tenant and the landlord. For instance, if the landlord will repair the chicken house or install a water system, then the tenant may agree to establish grassed waterways or contour a field.

NOTE.—The author is on the staff of the Iowa State College Agricultural Extension Service, Ames, Iowa.

Therefore, for the business purpose of figuring unused or unexacted value of limestone, it may be

Lease year, March 1, 194... to March 1, 194... Description of Farm _____ Size of Farm _____ Acres _____
 Name of landlord _____ Section _____ Township _____ Range _____ County _____
 Name of tenant _____
 Type of lease (check one): Straight cash _____ Livestock share _____ Crop share cash _____ Other (specify) _____
 A. In consideration of the agreements herein contained the undersigned hereby engage that within the lease year above specified the conservation practices as set forth in subsection A of section 4 below shall be completed on the above described farm.
 B. It is agreed that the undersigned will share contributions and costs necessary to the completion of the soil improving and conserving practices in the percentages as set forth in section B below.
 C. It is agreed that the estimated value or cost of the tenant's contribution will be as listed in section C below.
 D. It is further agreed that in the event the tenant leaves the farm before fully realizing upon his investment of funds or labor contributed to the carrying on of the soil conserving practices as set forth in section A below, he shall receive payment from the landlord for the unexhausted value in accordance with the schedule as set forth in section D below.

[illegible]

Signed _____ Landlord
 _____ Tenant

(Showing Unused Value Due Tenant)

Practice	Field	Date (1947)	Estimated cost or value of tenant's contribution	If the tenant leaves the farm on March 1 of any of the years shown below the landlord will pay the tenant as unused value the following percent of the tenant's investment or cost					
				1948	1949	1950	1951	1952	1953
Lime	A	Spring ..	\$100	Percent	Percent	Percent	Percent	Percent	Percent
Do	J	Fall	100	100	80	60	40	20	0
Terracing	Z	Spring ..	200	80	60	40	20	0	0
Phosphate 150 pounds per acre on corn in row.	D and F	..do.....	100	20	0	0	0	0	0
Phosphate on old pasture.	R	..do.....	80	70	40	20	0	0	0

With commercial fertilizer there is a great deal of difference, depending on what fertilizer is used

and that appeared no remarkable. With fertilizers, potassium, deal crop conditions the less. In ant u incre it is n comp How for th man v Sta of lif

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and how heavily it is applied. It is well known that the value of commercial nitrogen largely disappears with one crop season's use, and, therefore, no residual value would be recognized from commercial nitrogen.

With superphosphate, potash, or mixed fertilizers containing mostly phosphorus and potassium, the rate of depreciation will depend a great deal on the amount of fertilizer applied and the crop on which it is used. Detailed recommendations for rate of depreciation under average conditions are given in the instructions attached to the lease rider.

In contouring an intertilled crop, since the tenant usually receives immediate compensation for increased crop yields and from saving of power, it is not customary to provide him with additional compensation for unused values for contouring. However, if Government payments are available for this practice, they naturally should go to the man who does the work.

Standard terraces may have an indefinite length of life. For purposes of setting unused value, it

is suggested that a 5-year depreciation period may be used with a flat 25-percent depreciation rate for each year.

It is customarily the responsibility of the tenant to supply normal maintenance for terraces once they are erected on the farm. If he fails to provide this maintenance, he should make a refund to the landlord for the cost of repairing the damage. In the case of a cloudburst, or similar uncontrollable damages, the landlord should share the expense of reestablishment and repair.

The construction of diversion terraces, dams, and reservoirs for livestock water should be handled the same as standard terraces. A 3-year depreciation schedule is suggested for grassed waterways. Where terracing, contouring, or strip cropping are followed, a major program for relocation across fences may be necessary. If the tenant makes a major labor contribution, it may be desirable to place a value on his labor invested and write it off at 20 percent a year over 5 years' time for this improvement.

EROSION STOPPED, PRODUCTION DOUBLED.—"The Soil Conservation Service came at an appropriate time for the land leveling that had to be done with the new irrigation system that was being developed," writes Roger Palmblade, Minden, Nebr., a cooperator in the Kearney County Soil Conservation District.

"The saving that has been made by the farmers in having the engineers . . . supervise the work of land leveling has run into thousand of dollars. The farmers are also given help in planning their irrigation units and crop rotation . . . thereby saving much labor and also water that was wasted.

"Terracing is a new idea to us and in just the short time that it has been done here we can see what we have been losing in topsoil for the past years. We were among the first farmers to install terraces in this community and we were more than pleased with its saving of soil and keeping the rains from washing down the hills. Last fall we had the heaviest rainfall on record for September and October and we really had a chance to see what moisture and soil-saving practices will do to rough land.

"We are being shown what controlled waterways and grass seeding can do to stop erosion. There are several farms in this area that have lost most of their topsoil but with terracing, contour farming, and grassed waterways their production has been doubled in many instances.

"There are dams being put in to control erosion, stop run-off water and supply drinking water for stock. We were surprised how much water we were losing until we saw what the dams were holding back. We are having a dam constructed this year for livestock water. We figure it will save use the price of a windmill, about \$300."

CORRECT TECHNIQUES OPEN NEW OPPORTUNITIES.—"I was one of the first cooperators with the Plum Beaver District and have found the mapping service and the complete farm plan, which is part of my agreement, one of the most important factors in helping establish and maintain a complete erosion control program," says Clarence Choat, St. Edward, Nebr.

"I have two drop-inlet soil-saving dams built in 1934 and 1935 which have completely controlled gullies that would otherwise be very serious by this time. One of these has a 30-inch square concrete tube which was larger than I thought necessary. Am glad now it was properly designed as it will be doing its job long after I am gone . . .

"Have several fields terraced at the present time and wouldn't part with a single one. I'm satisfied terrace system are properly laid out and constructed insofar as grade, size, and outlet protection, one of the most efficient practices available.

"Also, I think a bad terrace system is one of the worst things that can happen to a farm.

"We are in need of additional technicians in our district here and I know that is true in the district south of us also . . .

"Farmers at present are more able and more willing than ever before to go ahead and do something for their land and their future. They should have every opportunity to do it properly."

FARM VALUE TRIPLES IN FIVE YEARS.—"Five years ago, I purchased a farm in a badly run-down condition," says Bob W. Hall, Wynne, Ark.

"The farm consisted of about 50 percent pasture land, and the other 50 percent was level to gently rolling row-crop land.

"The five-year average for production of lint cotton at that time was 219 pounds per acre.

"I began soil conservation practices immediately and by strip cropping, terracing, building spillways, rotation of crops and using winter cover crops I have been able to increase the lint yield to 502 pounds per acre.

"The hill pasture land was brushed, fenced, and seeded in bermuda and lespedeza, which I estimate increased the price of the land per acre to three times the value for which it was purchased."

IRRIGATING *for* Profit



1. Plastic siphon tubes used effectively for furrow irrigation.

2. Good water application and cover crop on steep sloping land.

3. Intensive land use is joined with good water-control devices.

4. Good water control structures, skilfully operated, bring profits.

5. Underground pipe system on steep orchard land provides for effective water control.

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By Frank Kimball

ALMOST ONE-HALF of all the irrigated lands in the United States are now in soil conservation districts, and the demands on the Soil Conservation Service for technical assistance in these areas are increasing daily. Farmers eagerly seek this assistance because it increases their profits.

The pay-off from the labors of irrigation farming depends largely on efficient control of water during its application to properly prepared crop lands, in accordance with the water needs of the crops. Farmers are coming to realize that the skill with which they operate their irrigation systems is one of the most important factors affecting crop yields.

The management of available water includes a field of operations which extends from the source of supply down to farm waste ditches and drainage outlets.

In order to maintain a stable agriculture in any section of the country, it is necessary that the best uses be made of soil and water resources, consistent with climatic conditions and other major considerations. Where irrigation farming is carried on, the agriculture practices are more or less intensified and require considerable skill and diligence. Operating costs usually run high and it is imperative that soil fertility be maintained and crop yields be kept high to assure profitable production. Livestock production and irrigation farming are inseparable operations in much of the West. In areas where irrigation must necessarily be practiced without benefit of livestock, costs go up and management problems become more difficult.

Labor and equipment shortage have served to focus more attention on problems of water management and farm management, resulting in considerable improvement in the operation of many individual farms. Usually these improvements are directly traceable to the adoption of conservation practices on irrigated lands, including more efficient use of water supplies, and the using of such lands according to their capabilities.

The most significant conclusion to be drawn from a study of accomplishments is that farmers who have applied conservation practices on irrigated lands have received increased profits for their efforts. For example, A. E. Watford, who received

some technical assistance through the Hagerman-Dexter Soil Conservation District, Roswell, N. Mex., has been able to increase his cotton yield 50 percent while cutting his irrigation costs in half. He has said that land leveling, relocation of irrigation ditches, and improved irrigation practices made this difference. "It was impossible for three men to irrigate my farm properly when I moved to this place 4 years ago," he recalls. "Last year I irrigated the place by myself."

Or consider the case of A. L. Roddick of the Mission Soledad Soil Conservation District in California. He leveled 155 acres of irrigated land in the late summer of 1944. Surveying, staking, and earth hand diagrams were furnished by Soil Conservation Service technicians assigned to work with the district. The earth moving was done by private contract, and involved 80,000 cubic yards of material. As a result, Roddick is now using 30 percent less water, and is saving 40 percent on irrigation labor. He is also getting increased crop yields due to better distribution of irrigation water. The land is used for sugar beets, carrots, spinach, tomatoes, and other field and truck crops.

Savings such as these, under intensive land use, clearly demonstrate the value of conservation work. At least it did for Roddick, for he has since leveled an additional 90 acres of irrigated land.

Most of the work which Soil Conservation Service technicians have dealt with in irrigated areas has been in connection with the improvement of physical works facilitating the use of irrigation water, and lands in need of conditioning for cultivation, improved irrigation, and farming practices. In the areas where sound conservation techniques have been established on the land and in water use, the trend of production costs is definitely downward, while the trend of crop yields is just as positively upward. The saving in labor alone on conservation-planned irrigated farms has usually offset a large part of initial costs of establishing the physical improvements. Additional profits are invited by the prevention of soil erosion and deterioration, and by the balancing of water supplies with desirable crop rotations.

In other words, in order to obtain satisfactory crop yields on irrigated farms it is necessary to adhere closely to the principles of good water use and good land use. Marked and continued deviations from either of these principles may not only cause drastic reductions in crop yields, but also permanent reductions in the productive capability

NOTE.—The author is head, irrigation section, engineering division, Soil Conservation Service, Washington, D. C.

ties of the land.

According to estimates made by the Soil Conservation Service, there are approximately 11,500,000 acres of irrigated lands in the United States on which one or more conservation measures should be applied, or for which irrigation systems should be repaired or improved. In order to get this conservation job done it will be necessary to make plans for improvements based upon detailed individual surveys, since general recommendations and standardized plans are not always applicable.

Irrigation lands range from native hay meadows to intensified truck farming, orchards, and specialty crops. It naturally follows that farm irrigation is influenced by a wide variety of factors. Some of the more important of these are climate, soils, water supply, condition of irrigation works, organizational problems, local irrigation practices, and markets.

The four main elements which Soil Conservation Service technicians have stressed in planning individual irrigated farms have been (a) land use, (b) land preparation, (c) water distribution systems, (d) water application. The engineering controls have been planned to facilitate proper land and water use.

Generally the irrigator is most concerned with the ability of his irrigation system to supply the needed amounts of water to his crops in the shortest lapse of time. The farm plan should include recommendations to enable him to achieve this objective, but at the same time it should assure uniform application of water to his crops without soil erosion or excessive use of water, and with a minimum amount of labor.

The first essential in irrigation is the adequacy of the water supply. Next in importance are the diversion, storage, or distribution systems which make it possible to get the water to the farm headgate. Generally, group associations, irrigation districts, or informal organizations are set up to operate and maintain these physical works. Repair and improvement jobs are often quite complex and require considerable engineering skill and ingenuity to prepare sound designs which are economically feasible.

Problems of inadequate water supplies, need for improvements in irrigation systems, exclusion of lands not suited for irrigation and poor land drainage are typical of those requiring group action.

While the interest in the solution of these group problems is continuing at a high level, the greatest number of requests for engineering investigations and surveys have been those connected with the preparation of individual farm conservation plans.

A plan of conservation operations, as prepared by Soil Conservation Service technicians, is based on surveys of physical conditions, farm history, and combined farmer and technical judgment, thereby eliminating a lot of guesswork and rule-of-thumb methods.

Technicians and farmers join in making trial irrigations to test out the systems that are planned. This method enables more accurate adjustment of the heads of water, lengths of runs or width of border strips, and adds to the knowledge of what are the most suitable irrigation conditions for each field.

Data as to the depth and profile characteristics of the soils in each field to be irrigated are necessary in order to estimate soil storage capacities and the rate of intake, or penetration of water into the principal rooting zones of the crops. Such information is best gained by actual irrigating experience, making frequent use of a shovel, auger, and moisture probe. It is also important to observe the amounts of water that can be turned into furrows, borders, etc., without causing erosion. Positive control over the amounts of water applied are usually obtained through the use of border gates, spiles, pipes, or other suitable devices for turning the water from head ditches into the fields.

Soil moisture is the most important single factor affecting crop yields on irrigated lands. From a practical point of view it is not advisable to wait until the available supply of moisture has been used up before applying the next irrigation because plant growth might be seriously retarded. Growing plants use water continuously, and the best crop yields are obtained when plant vigor and growth are uninterrupted.

In many areas water supplies are short in certain seasons. Here a workable balance must be maintained between water and crops. Crop rotations must be planned to conform to the availability of the water. The highest efficiencies from water applications will be had on soils where fertility has been maintained through crop rotations, manure, or commercial fertilizers as needed.

Water brings higher crop yields on a fertile soil than on one which is infertile.

Far too many farmers today are trying to irrigate irregular land surfaces. This practice just doesn't fit into plans for profitable farming operations. It takes more time and labor to get the job of irrigating done, and the crop yields and net profits are materially reduced, as compared with those from farms having fields properly leveled to facilitate uniform distribution of water. Irregular land surfaces produce irregular stands of crops, encourage excessive use of water, contribute to soil erosion, and aggravate drainage conditions.

Generally, the best farm irrigation systems and practices are found in areas where water supplies must be carefully managed to last throughout the season. When necessary, ditches are lined to prevent seepage losses, and structures in the ditches are constructed of permanent materials to facilitate control of erosion, and proper control and distribution of water supplies. Farmers in such areas also level and fertilize their lands, and con-

struct field distribution systems that enable them to obtain positive control over water applications.

In areas where water supplies are plentiful it is often difficult to interest farmers in adopting conservation measures in irrigating, until their pocketbooks begin to feel the effects of lowered income.

Another adverse condition is often found in areas where owners rent their lands to large-scale operators for production of truck crops. Here the irrigation systems and land preparation are usually of the highest types, but too often water applications are poorly made, soil-building crop rotations are not used, and attempts are made to maintain soil fertility solely through the use of commercial fertilizers. Lengths of runs are governed more by property lines than by soils and topographic boundaries, the interest of mass methods of planting, irrigating, cultivating, and harvesting. In spite of this type of management, crop yields are high and profits large—but conservation methods and practices would produce even greater profits.

FAITH—AND HARD WORK—BUILT THESE TERRACES

By Dale Jaedicke

"Quiero hacer terrazas dos pies de alto en mi terreno."

"I want to build terraces 2 feet high on my farm land," said 84-year-old Julian Montoya to the work unit conservationist of the Western Mora, N. Mex., Soil Conservation District. That was a few months ago, and now a large part of the terrace system has been built. However, many things happened in the meantime.

TO BEGIN WITH, the work unit conservationist was sure Señor Montoya would not be able to rent district equipment to build the terraces. Because of Señor Montoya's advanced age, together with the fact that he had no help on the farm, the work-unit conservationist was not too optimistic about getting the job done. District personnel discussed the matter and decided to try to sell Señor Montoya on strip crop-

ping as an alternate method of solving his erosion problem, though in this case strip cropping would not have been so good as terraces. This plan was tried, but to no avail, Señor Montoya wanted to build terraces. In the face of this determination a conservation plan was prepared which provided for terracing the land.

What district workers did not know at the time



It was this old plow, held together in spots with baling wire, that Señor Montoya used to build his terraces.

NOTE.—The author is district conservationist, Soil Conservation Service, Las Vegas, N. Mex.



Señor Montoya and Lawrence Redman, of the Soil Conservation Service, who helped plan the terraces.

but have since learned, was that Señor Montoya does not give up easily. Although 84 years of age, he is quite active and able to do a good day's work. Years ago Señor Montoya was in the sheep business. During a severe storm he lost nearly all of his 2,000 sheep. He started all over, only to suffer other losses—the loss of 622 lambs at one time. By that time he had had enough of the sheep business. He acquired a small sawmill, but when he got ready to undertake his first large operation he came home one day to find his mill destroyed by fire. Discouraged, but not to the point of quitting, Señor Montoya started farming. His farm, 437 acres of pasture and 47 acres of cultivated land, is located on the Coyote River about 10

miles northeast of the town of Mora, N. Mex. Through the years he noticed he was losing his soil and finally decided to do something about it—build terraces 2 feet high. It was then that he asked the Western Mora Soil Conservation District for help.

Part of the terrace system was laid out and Señor Montoya started to build terraces—2 feet high, using an old disk plow pulled by horses that were not too husky. The plow had a broken wheel and had been mended in many spots with baling wire. The actual mechanics of building terraces with this equipment were not too clear to Señor Montoya, but the district engineering aide helped him get started. Day after day he plowed, always moving the dirt toward the center of the terrace. At that time of the year the days were short and the early mornings quite cool, so that the actual working day wasn't too long, but he worked some almost every day. After plowing about 40 rounds, Señor Montoya decided he had moved all the dirt he could with the disk plow, but still his terraces were not quite 2 feet high. He hitched his team to a fresno and started moving dirt with it. There wasn't much to do—one pass with the fresno—and the terrace was completed. He went from that terrace to the next and then the next. Planting time approached, so he suspended the work until after harvest, when he intends to finish the job.

"I may not live to see all the benefits," he says, "but it should show others nearby what can be done without a lot of expense and special equipment."

Terracing isn't the only conservation practice undertaken by Señor Montoya. His pasture was unfenced, and, as a result, outsiders were overgrazing his land with sheep. To build a fence around the pasture required a lot of work, as it was rough, mountainous country, but the aged farmer built the fence all by himself. It took quite a while to cut posts and to carry them to the fence line, and to carry the spools of wire to the line. But he kept after it, day after day, until the job was completed.

Recently he asked the work unit conservationist if he could get some help in establishing a windbreak to protect his homestead and small orchard. The district provided the planting stock, and Señor Montoya planted it. He doesn't think that he will live to see the benefits—but, as active as he is now, there are some who think he will.



Chief Long John Jasper Whitebird (Hugh Bennett) in full regalia.

Crow Tribe extends Heap Big Welcome to Chief Long John Jasper Whitebird

NOT IN MANY MOONS had the Crow Country, on the Little Bighorn out Montana way, seen such big doings as those which marked Soil Conservation Day, July 22, in Hardin. Famed lovers of the land, the Crow Tribe made mighty plans, far in advance, to provide a fitting welcome for their white brother, Hugh Hammond Bennett, valiant warrior against the forces which would despoil the wood, the valley, and the stream.

The Crows sent out their best hunters to find and kill five well-meated buffalo. Barbecueing pits were prepared. An invitation went forth to friends of the soil for miles around to come—with lusty appetites for great feasting and speech-making, big music and ceremony. Crows, people from soil conservation districts, State officials, educators, businessmen, civic leaders, and others, to the number of 5,000, came to pay tribute to soil conservation and to Dr. Bennett, its distinguished advocate. First on the agenda was an inspection tour, by automobile, of soil conservation achievements in nearby areas under the aegis of the Big Horn Soil Conservation District.

The Crow Tribe, in traditional ceremonial dress, took Hugh Bennett to themselves, as the adopted son of Sidney Blackhair. In an impressive induction ceremony, the tribesmen made Bennett a member of their Grass Dance Society—a full fledged Crow, giving him the name and title, Chief Long John Jasper Whitebird.

Gen. Tom Campbell, reputed to be the largest wheat farmer in the world, in presenting the Chief of the Soil Conservative Service to the audience, told of his findings on a recent trip around the world: "In Australia I found a better knowledge of our guest's work than many of us have at home. In China, Generalissimo Chiang Kai-Shek said that he hoped some time to have this man directing their soil conservation program. Officials in Egypt were just as enthusiastic and when I was in South Africa Field Marshall Smuts told me how happy he was to have our guest with him. Later, French Government officials expressed a hope to have this man inspect the great area in North Africa between Casablanca and Tunis, which is semiarid. Very few men have such universal recognition.

"It is not strange that we are all very proud to have a man of such rare accomplishments with us today * * * the world's first authority on moisture conservation and erosion control."

In the feature address Hugh Bennett recalled that Theodore Roosevelt learned about the land at first hand up here in the Dakotas and Montana in the '80's and was one of the all too few early crusaders for conservation of the Nation's forest, soil, and other natural resources.

Bennett also recalled the cooperation of the Soil Conservation Service and the Bureau of Indian Affairs in connection with a reconnaissance survey made by the Service on the Crow Indian Reservation in 1939—a survey on which were based recommendations for conservation measures to safeguard the Crow country and make it more permanently productive.

"Of all the matters of urgency which face the Nation today," he said, "none is of greater importance to the people of the Big Horn Valley—and the rest of the country, for that matter—than the conservation of our limited remaining areas of productive land. You here in Big Horn and Yellowstone Counties have demonstrated your own conviction of this fact, first by voting to organize the Big Horn Soil Conservation District, which is our host today at this inspiring Conservation Field Day, and afterward by voting to extend the district to additional lands in this important Montana agricultural area. And I understand that a third extension of your district is to block out the whole of Big Horn County."—WELLINGTON BRINK.

Remarks by Joe Medicine Crow, Member Crow Tribe

Soil Conservation Day, Hardin, Mont.



Left to right: George Brown, Harry Don't Mix, Johnny Hold-the-Enemy, Hugh Bennett, Sidney Blackhair, Chester Medicine Crow, Art Bravel, and Thomas Yellowtail.

THIS IS INDEED an auspicious day to all the people of Big Horn County and of the Crow Reservation, one, I am sure which will stand as a highlight in the annals of this part of the State. In behalf of the Crow people, Dr. Bennett, I wish to extend a heap big welcome to you and may your visit with us today be a happy one and long remain in your heart.

At this time comes a solemn moment in our program, the enactment of the Crow induction ceremony, a traditional rite used to induct new members into the Grass Dance Society, a society for men of rank, honor, and achievement. The members of the society, headed by Sidney Blackhair, and the members of the tribe as a whole, deem

it a special honor to induct Dr. Bennett into the Crow Tribe because he is regarded as a man whose knowledge and skill have been dedicated to a noble cause—that of conserving the health, the beauty, and the good in the soil, which is consistent with the Indian's philosophy of this natural environ, namely, the land itself which he affectionately calls his Mother Earth.

From time immemorial the Indian has been a conservationist. He never purposely exploited the animals of the forests and plains, nor the birds of the air, nor the things that grow upon the land. He considered all creatures and plants as his inherent blessings from the Great Spirit, and, therefore, used them reverently and wisely.

So it is with this traditional concept in our hearts, Dr. Bennett, that we are happy and honored to accept you as a brother. We know your heart is good and your work is noble. You have come to the heart of the Crow Country, once a great natural empire. It is a good country. When a fur company expedition approached the Crow Country, Chief Arapoosh met them upon a high mountain top and spoke to them thus:

"You see before you my country, the Crow Country. It is a good country! Why? Because the Great Spirit has put it in exactly the right place. To the north it is too cold; to the south, it is too hot; to the west the land is rocky and rough and our brethren there must eat only fish; and to the east the land is flat and barren and the water

dirty. Yes, the Crow Country is a good country. In it are many animals that provide for my food and shelter; in it grow many berries and plants that are good to eat. Treat my country well and it will treat you well in return; despoil it and it will despoil you in the end."

Dr. Bennett, the wild animals have retreated into the fastness of those yonder mountains, but in their stead now graze fine herds of cattle and sheep; the wild berries have receded into the waste of the wilds, but in their stead have come into existence rich fields of grain, hay, and beets.

It is our hope that with men such as you to guide us that we will be able to follow the words of Chief Arapoosh when he said, "Treat my country well and it will treat you well in return."

SAVE SOIL AND SAVE ALL

(Continued from page 84)

With the profits from my enterprises, I have bought a tractor; this will help me increase my farming operations so I can help with the feeding of the starving people of the world.

I can truthfully say that agriculture has been my past, agriculture and F. F. A. my present, and agriculture and vocational agriculture teaching, along with soil conservation, I hope will be my future.

Then, if this job of conserving our few inches of topsoil is carried out, the time will come again when we can say that the Roanoke River is a crystal-clear stream, full of trout and other fish, and not a muddy river of mud cats.

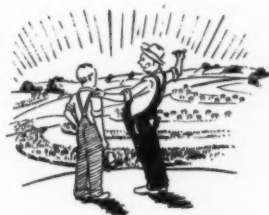
Now if I may, I shall use the words of Thomas Jefferson. While in Paris, Thomas Jefferson wrote John Adams, saying, "The cultivators of the earth are the most valued citizens, most independent, most virtuous, and are tied to their country and webbed to its liberty with the most everlasting bonds."

CONSERVATION MAJOR FACTOR.—"You wouldn't know it was the same farm," writes Carl Smith, Chatsworth, Ga., a cooper in the Limestone Valley Soil Conservation District.

"My yields per acre in 1946 were a bale of cotton per acre, 40 to 50 bushels of corn per acre, and I have changed my type of farming from row crops over to close-growing crops, such as annual lespedeza, lespedeza sericea, and have enlarged my acreage of permanent pasture, on which I am growing white Dutch clover, Dallis grass, Kentucky bluegrass and annual lespedeza, and in the place of de-

pending on one crop for my income, I have several crops today that furnish income. For example, I have a herd of Hereford beef cattle which consumes the lespedeza hay and pasture grasses that I produce on my farm, which in turn gives me a nice revenue. And since my hay crop was very good in 1946, I am selling several tons of annual lespedeza hay this spring.

"I have been able to operate this farm and, with my expenses, I save some money, although I realize that the increase in prices of farm products have played a great part in my increased income. I sincerely believe the soil conservation program that I have established on my farm has been the major factor in my increased income. I have been able to save some money, and, at the same time, build a house and barn on my farm . . . I was forced to construct a barn to take care of my cattle and increased production of hay. I also found that kudzu was an excellent crop for hogs."



BETTER FARM FOR SON.—"One reason I am grateful for the help and guidance I have been given by the Soil Conservation Service is that my boy, who has been overseas in the army, is willing to stay with me now since he returned," writes J. C. Gunter, who operates a 240-acre farm near Austin, Ark.

"In June 1939 the Soil Conservation men came at my request to help me plan my farm. We went over every field and decided on what needed to be done. At that time I was depending on cotton for my cash crop and the average was about one-half bale per acre. Corn produced about 20 bushels per acre. I was just barely making enough money to get by and had been increasing my acreage of cotton as my yield went down so that I could pay for my land and live.

"In 1940 I started cultivating on the contour and planting cover crops. In 1941 I terraced about 11 acres of rolling land. I rotate my crops and have continued improving my soil until now I can produce a bale per acre. In fact, in 1945 I produced 11 bales of cotton on a little less than 10 acres. On July 5, 1945 I planted 5 acres of corn following a crop of vetch and produced an average of 30 bushels per acre. Fall oats produced 44 bushels per acre and the lespedeza I planted on the oats in the spring made more than two tons of hay per acre. This same oats and lespedeza furnished grazing for 45 head of beef cattle for two months.

"In 1946 I produced 13½ bales of cotton on 11 acres. Six acres of corn produced 240 bushels, which was the best corn I ever produced on this farm. My oats made 40 bushels per acre.

"In addition to improving my crop land, me and my tenant started improving my pasture soon after the place was planned.

"Since I have been farming the conservation way, my yield and income have more than doubled. If I had to go back to the old system I would quit farming. In addition to having several cash crops I sold 11 yearling calves in 1945 for \$1107. This year I sold 26 head for \$2785.

"Since I started on this system of farming I have built a large barn and have added electricity and modern conveniences to the home."

WHAT'S HAPPENING OUT ON DISTRICT FARMS

HOLDING THE LINE ON LIVING STANDARDS.—

"When the Missouri Assembly passed the Missouri Soils District measure in 1943 and Harrison County formed the first soil district in the State, with a group of 14 other farmers in my community I signed a balanced farm plan covering 685 acres of my land," writes Fred G. Powell, Eagleville, Mo.

"The remaining 200 acres being in a different community, will be signed up with a different group which has its application before the county board of supervisors for approval at the present time.

"With the help of the Soil Conservation Service there has been already constructed 55,000 feet of standard terraces, 3750 feet of terrace outlets, 8 farm ponds piped and fenced. The farm plans on the land call for additional construction of all these types each year until the farm plan has been completed.

"In addition to work completed on my own land there have been 17,200 feet of terraces and 1200 feet of waterways built on 200 acres of land, of which I am trustee, which is left in trust to two local churches. There has been 3,000 tons of agricultural limestone applied on my land, and an average of 4 tons of commercial fertilizer is applied each year.

"The average production of these acres has been increased at least 60 percent, much of the thinner land and the land having greater slope has more than doubled in production. This increase in production and controlled soil erosion is the direct result of educational and demonstration projects carried on by the Soil Conservation Service in this area in co-operation with local farmers.

"While this letter concerns only land in which I am personally interested, the same thing is happening on a great many northwest Missouri farms, a section of the country where the intense grain farming that was necessary during the first world war removed a large part of the good top soil and left the entire area in a condition where the productivity of the land must be restored or the farm standard of living lowered.

"This same thing has happened in a lesser degree during the last war making it necessary to again step up our soil conservation measures to hold the line on farm living standards when farm prices again drop to their natural level."

DAIRY PRODUCTION UP.—"I have recently compiled some figures from the records of the Tillamook County Creamery Association for the annual report of the South Tillamook Soil Conservation District, showing the increase in production in the district as compared to production in the county outside the district," writes E. E. Allen, Jr., Sand Lake, Ore., chairman of the Board of Supervisors.

"Tillamook County Creamery Association is a cooperative organization of 17 cheese factories which handles all the milk produced in the county. Dairying is the only agricultural activity in the county.

"As you know, the Soil Conservation Service has been cooperating with the district since its organization in 1941, and the assistance it has given us both in equipment and technical service, is in a very great measure responsible for the success we are enjoying.

"Following are comparative figures on production:

	1941 pounds of milk	1945 pounds of milk	Percent Gain or Loss
Factories within the district.....	30,020,656	34,202,813	+13.9
Factories outside the district.....	64,539,320	52,826,684	-18.2

WHOLE FARM WORKING.—"At present I haven't got a single idle spot on my farm," writes S. B. Huff, of the Greenville County Soil Conservation District, Piedmont, S. C.

"Meadow strips were put in proper places, land too rough for cultivation was put in sericea and kudzu, border strips established and woodland improvement started.

"I have reduced my cotton acreage to one-half and still make just about as many bales as I use to under the old method. I am gradually reducing the amount of fertilizer used.

"I have reduced acreage planted to corn, and seed a large acreage of small grain with greatly increased yields.

"Under the old system it was a difficult job to have enough food for livestock but now the problem is somewhere to put the feed crops harvested.

"I follow strip cropping throughout my farm and I will say that any farmer that does not follow this system in the Piedmont section is working squarely against himself.

"I follow all grain with lespedeza and do not cut much for hay but more for seed."

AFTERTHOUGHT.—After the article by M. J. Keese, Mississippi Rolls Out a Green Carpet, went to press for October publication, it occurred to the editor that many readers undoubtedly would be interested in a more detailed description of the land blocks outlined on the land use map of the R. A. Coley farm. From Service technicians in Mississippi, therefore, we have obtained the following supplementary information as to this particular farm:

CLASS II-A—Good land that can safely be cultivated with good management practices if drained; fairly deep, moderately permeable flat bottom land soils.

CLASS III—Moderately good land that can safely be cultivated with intensive conservation practices; fairly deep, slowly permeable, moderately eroded upland and terrace soils mostly on gentle slopes.

CLASS IV-A—Fairly good land that is best suited for pasture, hay, or woodland, but can be cultivated occasionally; shallow, slowly permeable, slightly eroded flat terrace soils.

CLASS VI—Fairly good land that is best suited to pasture with good management and may be used for woodland; fairly deep, slowly permeable, moderately to severely eroded upland soils on steep slopes.

FILM AVAILABLE.—Wherever Raindrops and Soil Erosion has been shown, it has met an enthusiastic response. This film is now available in revised form. The main body is unchanged but there are new opening and closing sequences which relate the picture to the whole soil-conservation program. A brief explanation of soil detachability and soil transportability has been added.

An interesting and dramatic feature of the new version is an extreme close-up of several drops of rain striking wet soil surface. This is shown in color by use of special camera equipment obtained from the Navy Department, equipment which photographed at 3,000 frames of film per second. When this film is projected at 24 frames per second, the action is slowed down to where the scene might almost be mistaken for an atomic bomb explosion.

Early reports from Maryland showings indicate that Raindrops and Soil Erosion will be very useful. Prints will be obtained on loan from regional film libraries, Soil Conservation Service, at Upper Darby, Pa.; Spartanburg, S. C.; Milwaukee, Wis.; Fort Worth, Tex.; Lincoln, Nebr.; Albuquerque, N. Mex., and Portland, Ore.

